

CHAPTER 16

Capital Structure: Limits to the Use of Debt

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Chapter Outline

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16.1 Costs of Financial Distress

- Bankruptcy risk versus bankruptcy cost.
- The possibility of bankruptcy has a negative effect on the value of the firm.
- However, it is not the risk of bankruptcy itself that lowers value.
- Rather it is the costs associated with bankruptcy.
- It is the stockholders who bear these costs.

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16.2 Description of Costs

- Direct Costs
 - Legal and administrative costs (tend to be a small percentage of firm value).
- Indirect Costs
 - Impaired ability to conduct business (e.g., lost sales)
 - Agency Costs
 - Selfish strategy 1: Incentive to take large risks
 - Selfish strategy 2: Incentive toward underinvestment
 - Selfish Strategy 3: Milking the property

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Protective Covenants

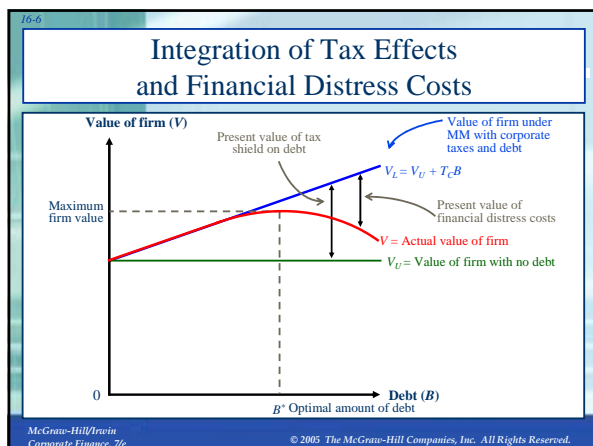
- Agreements to protect bondholders
- Negative covenant: Thou shalt not:
 - Pay dividends beyond specified amount.
 - Sell more senior debt & amount of new debt is limited.
 - Refund existing bond issue with new bonds paying lower interest rate.
 - Buy another company's bonds.
- Positive covenant: Thou shall:
 - Use proceeds from sale of assets for other assets.
 - Allow redemption in event of merger or spinoff.
 - Maintain good condition of assets.
 - Provide audited financial information.

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16.4 Integration of Tax Effects and Financial Distress Costs

- There is a trade-off between the tax advantage of debt and the costs of financial distress.
- It is difficult to express this with a precise and rigorous formula.

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The Pie Model Revisited

- Taxes and bankruptcy costs can be viewed as just another claim on the cash flows of the firm.
- Let G and L stand for payments to the government and bankruptcy lawyers, respectively.
- $V_T = S + B + G + L$

- The essence of the M&M intuition is that V_T depends on the cash flow of the firm; capital structure just slices the pie.

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16.5 Signaling

- The firm's capital structure is optimized where the marginal subsidy to debt equals the marginal cost.
- Investors view debt as a signal of firm value.
 - Firms with low anticipated profits will take on a low level of debt.
 - Firms with high anticipated profits will take on high levels of debt.
- A manager that takes on more debt than is optimal in order to fool investors will pay the cost in the long run.

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16.6 Shirking, Perquisites, and Bad Investments: The Agency Cost of Equity

- An individual will work harder for a firm if he is one of the owners than if he is one of the "hired help".
- Who bears the burden of these agency costs?
- While managers may have motive to partake in perquisites, they also need opportunity. Free cash flow provides this opportunity.
- The *free cash flow hypothesis* says that an increase in dividends should benefit the stockholders by reducing the ability of managers to pursue wasteful activities.
- The *free cash flow hypothesis* also argues that an increase in debt will reduce the ability of managers to pursue wasteful activities more effectively than dividend increases.

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16.7 The Pecking-Order Theory

- Theory stating that firms prefer to issue debt rather than equity if internal finance is insufficient.
 - Rule 1
 - Use internal financing first.
 - Rule 2
 - Issue debt next, equity last.
- The pecking-order Theory is at odds with the trade-off theory:
 - There is no target D/E ratio.
 - Profitable firms use less debt.
 - Companies like financial slack

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16.10 How Firms Establish Capital Structure

- Most Corporations Have Low Debt-Asset Ratios.
- Changes in Financial Leverage Affect Firm Value.
 - Stock price increases with increases in leverage and vice-versa; this is consistent with M&M with taxes.
 - Another interpretation is that firms signal good news when they lever up.
- There are Differences in Capital Structure Across Industries.
- There is evidence that firms behave as if they had a target Debt to Equity ratio.

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Factors in Target D/E Ratio

- Taxes
 - If corporate tax rates are higher than bondholder tax rates, there is an advantage to debt.
- Types of Assets
 - The costs of financial distress depend on the types of assets the firm has.
- Uncertainty of Operating Income
 - Even without debt, firms with uncertain operating income have high probability of experiencing financial distress.
- Pecking Order and Financial Slack
 - Theory stating that firms prefer to issue debt rather than equity if internal finance is insufficient.

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16.11 Summary and Conclusions

- Costs of financial distress cause firms to restrain their issuance of debt.
 - Direct costs
 - Lawyers' and accountants' fees
 - Indirect Costs
 - Impaired ability to conduct business
 - Incentives to take on risky projects
 - Incentives to underinvest
 - Incentive to milk the property
- Three techniques to reduce these costs are:
 - Protective covenants
 - Repurchase of debt prior to bankruptcy
 - Consolidation of debt

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16.11 Summary and Conclusions

- Because costs of financial distress can be reduced but not eliminated, firms will not finance entirely with debt.

Value of firm (V)

Maximum firm value

0

Debt (B)

Optimal amount of debt B^*

Present value of tax shield on debt

Value of firm under MM with corporate taxes and debt $V_L = V_U + T_c B$

Present value of financial distress costs

$V =$ Actual value of firm

$V_U =$ Value of firm with no debt

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16.11 Summary and Conclusions

- Debt-to-equity ratios vary across industries.
- Factors in Target D/E Ratio
 - Taxes
 - If corporate tax rates are higher than bondholder tax rates, there is an advantage to debt.
 - Types of Assets
 - The costs of financial distress depend on the types of assets the firm has.
 - Uncertainty of Operating Income
 - Even without debt, firms with uncertain operating income have high probability of experiencing financial distress.

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